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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,531	01/06/2004	Keiji Takanosu	1113.43392X00	3305

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EXAMINER

LIN, JAMES

ART UNIT	PAPER NUMBER
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1762

MAIL DATE	DELIVERY MODE
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08/30/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/751,531	TAKANOSU ET AL.	
	Examiner	Art Unit	
	Jimmy Lin	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 6-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/6/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-5 in the reply filed on 7/16/2007 is acknowledged.
2. Claims 6-8 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 7/16/2007.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation of "while each mask hole of said metal layer on the side of said supply source of said deposition material has a longitudinal size *including a plurality of said pixels in common*" (emphasis added by Examiner). The claim is indefinite as to how a mask can have a plurality of pixels in common with the electroluminescent panel. For the purpose of this examination, the claim will be interpreted to have each mask hole correspond to a pixel of the substrate.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1 and 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshita (JP 2001-237072, as provided by Applicant) in view of Yamazaki et al. (U.S. Patent No. 6,830,494) and Applicant's admitted state of the prior art (hereafter, AASPA). Takai et al. (U.S. Publication No. 2002/0197395) is cited for evidence of inherency.

Oshita teaches a method of making an electroluminescent (EL) display (abstract). A first electrode 3 is formed on a transparent substrate. An insulating layer is formed over the first electrode, wherein the insulating layer has rectangular apertures that expose portions of the first electrode ([0026]-[0027]; Fig. 25). An EL layer 8 is then formed onto the first electrode using a metal mask. The EL layer comprises of an organic hole transportation layer, an organic luminous layer, and an organic electron transport layer [0002],[0028]-[0029]. A second electrode layer 9 is then formed on the EL layer.

Oshita teaches that the metal mask can be a three-layer laminating of nickel-copper-nickel such that a copper layer is sandwiched between two nickel layers ([0016]; Figs. 8-14). Nickel is inherently a magnetic material (see [0005] of Takai). The copper layer is interpreted to be the claimed metal layer on the side of the transparent substrate and the nickel layer (i.e., the nickel layer that is closer to the supply side and further away from the substrate) is interpreted to be the claimed magnetic metal layer that is on the supply side. The metal layer closer to the substrate has holes that are smaller in size than the holes in the metal layer closer to the supply (Fig. 2).

Oshita does not explicitly teach the first electrode layer is driven by active devices. However, Yamazaki teaches that it is well known in the EL art that the EL device can have an active matrix, wherein the first electrode 112 is driven by a thin film transistor 110 (Fig. 1C).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a thin film transistor in the EL device of Oshita to drive the first electrodes because Yamazaki teaches that the use of a thin film transistor is operable in an EL device. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Oshita teaches that the EL layers can be a hole transportation layer (i.e., a hole transfer layer), an organic luminous layer (i.e., an organic emitting layer), and an electron transport layer (i.e., an electron transfer layer), but does not explicitly teach that the EL layer comprises additionally of a hole injection layer and an electron injection layer. However, AASPA teaches that it is well known to use an EL layer comprising of a hole transfer layer, a hole injection layer, an emitting layer, an electron injection layer, and an electron transfer layer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used such layers as taught in AASPA in the EL display of Oshita with a reasonable expectation of success because AASPA teaches that such layers are operable in an EL layer.

Claim 3: Oshita does not explicitly teach that the metal layer on the side of the transparent substrate is thinner than the metal layer on the side of the supply source. Oshita only exemplifies that the copper layer can be 30 μm and that the nickel layer can be 20 μm [0016]. However, it would have been well within the knowledge of one of ordinary skill in the art to have made the copper and nickel layers to have any thickness with an expectation of similar results, especially since Oshita does not teach that the thickness of the metal layers has any criticality. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a copper layer and a nickel layer in the mask of Oshita with any thickness, including a copper layer having a smaller thickness than the nickel layer, with a reasonable expectation of success.

Claim 4: Oshita teaches that the mask holes have a longitudinal size (i.e., a long side) and a crosswise size (i.e., a short side) (Fig. 26).

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8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oshita '072 in view of Yamazaki '494 and AASPA as applied to claim 1 above, and further in view of Tsuchiya et al. (U.S. Patent No. 6,890,385).

Oshita, Yamazaki, and AASPA are discussed above. Oshita teaches that metal layers of the mask form steps (Fig. 14), but does not explicitly teach that the metal layer on the side of the supply source has a funnel-like shape. However, Tsuchiya teaches that it is well known in the art of EL deposition through a mask to use mask holes having a trapezoidal cross section (i.e., a funnel-like shape). The use of such a mask aperture can form a uniform thin film (col. 6, lines 44-55; Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed a trapezoidal cross section with the mask holes of Oshita with a reasonable expectation of success. One would have been motivated to do so in order to have formed a uniform thin EL film.

Tsuchiya does not explicitly teach that the sizes of the trapezoidal shapes have a tilt angle between 30° and 85°. However, Tsuchiya does teach that mask apertures having such trapezoidal shapes can form uniform thin films. One of ordinary skill would have optimized the width of the shorter side relative to the width of the longer side of the trapezoidal shapes, and thus the angle formed therebetween, in order to have optimized the uniformity of the thin film. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have optimized the widths of the trapezoidal shapes, and thus the angle formed, in the mask of Oshita and Tsuchiya through routine experimentation and to have experimented with the angles within the claimed range. One would have been motivated to do so in order to have optimized the uniformity of the thin EL film.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oshita '072 in view of Yamazaki '494 and AASPA as applied to claim 1 above, and further in view of Woodgate et al. (U.S. Patent No. 5,991,073).

Oshita, Yamazaki, and AASPA are discussed above, but do not explicitly teach that each corner of the mask holes has a curvature radius. However, Woodgate teaches that pixels having rounded corners can prevent light leakage (col. 20, lines 35-48). Pixels having rounded corners would require a mask having apertures with rounded corners in order to properly deposit the EL

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material into the pixel. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed the EL pixels of Oshita with rounded corners and to have used a corresponding mask having rounded corners with a reasonable expectation of success. One would have been motivated to do so in order to have prevented light leakage.

Woodgate does not explicitly teach that the curvature radius of the corners is less than 5 μm . However, Woodgate does teach that a pixel having a rounded corner can prevent light leakage. One of ordinary skill would have optimized the curvature radius of the corner in order to have minimized the light leakage. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have optimized the curvature radius of the pixel corners of Oshita through routine experimentation and to have experimented with the claimed range. One would have been motivated to do so in order to have minimized the amount of light leakage from the EL pixels.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JL



TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER